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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/607,211	06/25/2003	Stephen R. Forrest	10020/27902	5714

26646 7590 09/22/2004

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EXAMINER	
ORTIZ, EDGARDO	

ART UNIT	PAPER NUMBER
2815	

DATE MAILED: 09/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/607,211	FORREST ET AL.	
	Examiner	Art Unit	
	Edgardo Ortiz	2815	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 June 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4, 7-19, 21-24, 27-38 and 40-41* is/are rejected.

7)☒ Claim(s) *5,6,20,25,26 and 39* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *2/17/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-4, 8, 10, 12, 15, 21-24, 28, 30, 33 are rejected under 35 U.S.C. 102(e) as being anticipated by Kwong et al. (U.S. Patent Application Publication No. US2002/0074935). With regard to Claim 1, Kwong discloses an organic light emitting device comprising:

a first electrode (11), wherein the first electrode is resistive and has a first point and a second point (Fig. 1A);

a first contact (15) in electrical contact with the first point on the first electrode (11);

a second contact (16) in electrical contact with the second point on the first electrode;

a second electrode (17) disposed near the first electrode (Fig. 1A);

a donor semi-conductive organic layer (12) disposed between the first electrode (11) and the second electrode (17) and;

an acceptor semi-conductive organic layer (14) disposed between the first electrode (11) and the second electrode (17) and adjacent to the donor semi-conductive organic layer (12),

wherein a hetero-junction is located between the donor layer (12) and the acceptor layer (14) (paragraph 0003, lines 16-17),

and at least one of the donor layer (12) and the acceptor layer (14) is light-absorbing.

With regard to Claim 2, Kwong discloses a first electrode (11) that is an anode (paragraph 0003, lines 5-7).

With regard to Claim 3, Kwong discloses a second electrode (17) that is a cathode (paragraph 0004, lines 2-3). The first and second electrodes (11, 17) could serve as anode or cathode, depending on the desired configuration and are conceivable under the disclosure of the cited reference.

With regard to Claim 4, Kwong discloses first and second points at opposite ends of the first electrode (11), (Fig. 1A).

With regard to Claim 8, Kwong discloses a light-absorbing layer, which has spectral sensitivity in the visible spectrum (paragraph 0005, lines 9-12).

With regard to Claim 10, Kwong discloses another organic light emitting device (Fig. 3) including a donor semi-conductive organic layer (312) that comprises copper phthalocyanine (CuPc), (paragraph 0064, line 5).

With regard to Claim 12, Kwong discloses an exciton-blocking layer (314) between a first electrode (311) and a second electrode (315) and adjacent to either the first electrode or the second electrode (Fig. 3).

With regard to Claim 15, Kwong discloses a polymer layer (313) between the first electrode (311) and the second electrode (315) and adjacent to either the first electrode or the second electrode (Fig. 3).

With regard to Claim 21, Kwong discloses an organic light emitting device comprising:

a first electrode (11), wherein the first electrode is resistive and has a first point and a second point (Fig. 1A);

a first contact (15) in electrical contact with the first point on the first electrode (11);

a second contact (16) in electrical contact with the second point on the first electrode;

a second electrode (17) disposed near the first electrode (Fig. 1A);

a semi-conductive layer comprising a donor semi-conductive organic layer (12) and

an acceptor semi-conductive organic layer (14), wherein at least one of the donor layer (12) and the acceptor layer (14) is light-absorbing.

The limitation "*wherein the detector is adapted for measuring a lateral photovoltage*" is an intended-use limitation that does not patentably nor structurally distinguish the clamed invention from the structure as taught by Kwong. A recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. Ex parte Masham, 2 USPQ 2d 1647 (1987).

With regard to Claim 22, Kwong discloses a donor semi-conductive organic layer (12) disposed between the first electrode (11) and the second electrode (17) and an acceptor semi-conductive

organic layer (14) wherein a hetero-junction is located between the donor layer (12) and the acceptor layer (14) (paragraph 0003, lines 16-17),

With regard to Claim 23, Kwong discloses a first electrode (11) that is an anode (paragraph 0003, lines 5-7).

With regard to Claim 24, Kwong discloses a second electrode (17) that is a cathode (paragraph 0004, lines 2-3). The first and second electrodes (11, 17) could serve as anode or cathode, depending on the desired configuration and are conceivable under the disclosure of the cited reference.

With regard to Claim 28, Kwong discloses an organic light-emitting device (Fig. 3) including a donor semi-conductive organic layer (312) that comprises copper phthalocyanine (CuPc), (paragraph 0064, line 5).

With regard to Claim 30, Kwong discloses an exciton-blocking layer (314) between a first electrode (311) and a second electrode (315) and adjacent to either the first electrode or the second electrode (Fig. 3).

With regard to Claim 33, Kwong discloses a polymer layer (313) between the first electrode (311) and the second electrode (315) and adjacent to either the first electrode or the second electrode (Fig. 3).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 11, 13, 29, 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kwong et al. (U.S. Patent Publication No. US2002/0074935) in view of Harada (U.S. Patent Application Publication US2003/0007736). With regard to Claims 11, 13, 29, 31 and 32; Kwong essentially discloses the claimed invention but fails to disclose the donor semi-conductive organic layer comprising PTCBI and the exciton-blocking layer comprising BCP. However, Harada discloses an optical transmission module, which includes a light-detection layer (32) comprising a 3, 4, 9, 10-perylene tetracarboxilic acid bis-benzimidazole (PTCBI) layer (32B) and a bathocuproin (BCP) layer (32C), (Figure 5 and paragraph 0071, lines 1-15). Therefore, it would have been obvious to someone with ordinary skill in the art, at the time of the invention, to include the claimed donor semi-conductive organic layer comprising PTCBI and the exciton-blocking layer comprising BCP, as suggested by Harada, in order to transmit light efficiently (paragraph 0032, lines 1-6).

Claims 16 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kwong et al. (U.S. Patent Publication No. US2002/0074935) in view of Halls et al. (U.S. Patent No. 6,670,213). With regard to Claims 16 and 34, Kwong essentially discloses the claimed invention but fails to disclose that the polymer layer comprises PEDOT:PSS. However, Halls discloses a

photo-responsive device, which includes a blend of two semi-conductive polymers layer (4) which comprise PEDOT:PSS (Figure 1 and column 6, lines 6-10). Therefore, it would have been obvious to someone with ordinary skill in the art, at the time of the invention, to include the claimed the polymer layer comprises PEDOT:PSS, as suggested by Halls, in order to improve device performance when positioned between the anode and the photo-responsive material (column 6, lines 8-10).

Claims 7, 9, 18, 19, 27 and 35-38, 40 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kwong et al. (U.S. Patent Application Publication No. 2002/0074935). With regard to Claim 7, a further difference between the claimed invention and Kwong is, the claimed resistive electrode being 0.5-10cm long and 0.01-5.0 cm wide. It would have been obvious to someone with ordinary skill in the art, at the time of the invention, to provide a resistive electrode with the claimed dimensions, in order to provide desired transparency and/or conductivity.

With regard to Claims 9 and 27, a further difference between the claimed invention and Kwong is, the claimed resistive electrode having a resistivity of 5Ω/square-10KΩ/square or a resistance of 100Ω-100Ω. It would have been obvious to someone with ordinary skill in the art, at the time of the invention, to provide the claimed resistivity and resistance to the resistive electrode, in order to prevent errors in the device performance caused by the anode (resistive electrode).

With regard to Claims 18 and 19, a further difference between the claimed invention and Kwong is, the claimed optical beam spatial resolution of less than 20 μm or 50μm. It would have been obvious to someone with ordinary skill in the art, at the time of the invention, to provide the claimed optical beam spatial resolution in order to enhance the detection properties of the device.

With regard to Claim 35, Kwong discloses an organic light emitting device comprising:

a first electrode (11), wherein the first electrode is resistive and has a first point and a second point (Fig. 1A);

a first contact (15) in electrical contact with the first point on the first electrode (11);

a second contact (16) in electrical contact with the second point on the first electrode;

a second electrode (17) disposed near the first electrode (Fig. 1A);

a donor semi-conductive organic layer (12) disposed between the first electrode (11) and the second electrode (17) and;

an acceptor semi-conductive organic layer (14) disposed between the first electrode (11) and the second electrode (17) and adjacent to the donor semi-conductive organic layer (12),

wherein at least one of the donor layer (12) and the acceptor layer (14) is light-absorbing. Kwong fails to disclose the steps of placing the PSD in the path of the incident radiation, and measuring a current at the first contact and a current at the second contact, wherein the currents are used to determine the position of the incident radiation. However, it would have been obvious to someone with ordinary skill in the art, at the time of the invention, to provide the claimed steps, since those are known-functions of detector devices in order to measure current caused by incident-light.

With regard to Claims 36 and 37, a further difference between the claimed invention and Kwong is, applying no voltage or a voltage between 0.0 and –2.0 volts. It would have been obvious to someone with ordinary skill in the art, at the time of the invention, depending on the desired functionality for the device, photovoltaic for no voltage and photodetector with an applied voltage.

With regard to Claim 38, Kwong discloses a donor semi-conductive organic layer (12) and an acceptor semi-conductive organic layer (14), wherein a hetero-junction is located between the donor layer (12) and the acceptor layer (14) (paragraph 0003, lines 16-17).

With regard to Claims 40 and 41, a further difference between the claimed invention and Kwong is, a substantially linear response above 10μW incident power and a beam tracking velocity of at least 1.0 m/s. It would have been obvious to one having ordinary skill in the art at the time of the invention was made to obtain the claimed response and tracking velocity, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Allowable Subject Matter

3. Claims 5, 6, 20, 25, 26 and 39 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The cited prior art fails to disclose, teach or suggest, the claimed third and fourth electrical contacts disposed on respective third and fourth points on

the resistive electrode and a third electrode wherein the third electrode is resistive and has a first point and a second point; a third contact in electrical contact with the first point on the third electrode; and a fourth contact in electrical contact with the second point on the third electrode, and wherein the third electrode is disposed near the first electrode.

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edgardo Ortiz whose telephone number is 571-272-1735. The examiner can normally be reached on Monday-Friday (1st Friday Off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on 571-272-1664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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